

The environmental relevance of capital goods in life cycle assessments of products and services

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Many life cycle assessment case studies neglect the production of capital goods that are necessary to manufacture a good or to provide a service. In the ISO standards 14040 and 14044 the capital goods are explicitly part of the product system. Thus it is doubtful if capital goods can be excluded per se. The exclusion criteria to be applied on capital goods should rather be mass, energy or environmental significance as proposed in the ISO standards.

To quantify the environmental relevance of capital goods and infrastructures their contribution is quantified in a large variety of product and service systems. The life cycle inventory database ecoinvent data v1.2 formed the homogenous basis for the assessment of the environmental importance of capital goods and infrastructures. The importance is assessed on the basis of several hundreds of cradle to gate LCAs of heat and electricity supply systems, of materials extraction and production, of transport and waste management services. The importance within product (and service) groups is evaluated with statistical methods by comparing the LCA results including and excluding capital goods and infrastructures. The assessment is based on cumulative life cycle impact category indicator results. On one hand, a classification of product and service groups is proposed to give better guidance on when and where capital goods and infrastructures should be included or can be neglected. On the other hand, impact categories with a particularly extreme behaviour with regard to capital goods and infrastructures are identified. The presentation will propose rules of thumb with regard to the inclusion or exclusion of capital goods and infrastructures.

Key words: capital goods, infrastructure, environmental significance, ecoinvent data v1.2, energy production, material production, transport, waste management

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